# Laboratory Notebook, Cat. 1170

This notebook covers the period November 1873-December 1877. Most of the laboratory notes and drawings are by Charles Batchelor; a few are by Edison. The material relates primarily to batteries, induction coils, and telegraphy. There is also a list of basic scientific questions, ranging from Newton's law of gravitation to atomic theory. The book also contains numerous accounts and lists of prices, stock, and hours worked. The flyleaf is labeled "Experimental Researches." The book contains 74 numbered pages, followed by 11 unnumbered leaves. Some leaves have been torn out.

Blank pages not filmed: 18-19, 24-25, 34-49, 52-53, 56-57, 60-69, 72-73.

Missing pages: 27-28.

E4396
Cat. 1190

Ledger
Balances

Telephone in this

# Experimental researches.

Batteries. Page 1  Condensers 20.

A
B
C
D
E
F
G
H
I
K
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M
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V
W
Y
Z

Induction Coils 10

I K L M N O P Q R S T U V W Y Z

Perforators price 8

N
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Solutions Chemical Electro. 20

R
S
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Y
Z

Common Cell, Battery Experiments. Bradley Galv. used
Carbon. Closed circuit all time

1873. 1½ Carbon Cell
1 Outside Water
Inside Water

| Deflection | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Nov 27. 10:25 AM. | 17 | 5 | 1 | — |
| 28 8· PM | 19½ | 5½ | 1½ | — |

2 Outside Water
Inside Electropoion

| Nov 27 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 10:15 AM | 69 | 70½ | 73 | 34½ |
| 28 8 PM | 27 | 27 | 43 | 12 |

Outside Water 100 Hydro Sulph 5·
Inside Water 32 Chl. Cal. ½ oz

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Nov 27 10:25 am | 52. | 46 | 33 | 6 |
| 28 8 P.m. | 39 | 28. | 10 | 1 |

Outside Water & 1 spoonful of Hydrosulphuric Acid.
Inside Water 32 Muriatic Ac 4

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Nov. 27 10:15 AM | 37½ | 32½ | 23 | 4¼ |
| 28 8 PM | 26 | 27½ | 36 | 7 |

Outside Water 100 Hydro Sulph. 5
Inside Water 32 Sulph Soda ½ oz

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Nov 27 10:15 AM | 36 | 26½ | 11 | 1¾ |
| 28 8 P.m. | 11 | 9 | 6 | 1 |

Outside Water 100 Hydro Sulph 5
Inside Citric Ac. ½ oz Water 32.

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Nov 27 10:25 a m | 35 | 26 | 13 | 2 |
| 28 8 P m | 19 | 15 | 6 | 1 |

Outside Water 10 Hydro Sulph Ac 5
Inside HO 32 Sulph Cop. ½ oz

| | | | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Nov | 27 | 10.36 am | 57 | 52 | 41 | 8 |
| | 28 | 8 Pm am | 46 | 41 | 25 | 5 |

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1874 May 9.

I found that when I put Bichromate crystals into the porous & then poured water to within a ¼ inch of top & adding sulphuric acid the battery seemed a great deal stronger.

1875
April 10th

Ordinary Electropoion in porous cup & water outside with Iron outside & Cadmium inside makes a good battery

# Resumé of different Batteries

| | | | Composed of | | Electrode | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Battery. | Resistance | Outer cell | Inner cell | Outer cell | Inner cell. | EMF | Chemical Action. | Remarks. |
| 1 | Daniels | | Dilute Sulf Zinc | Sat Sol. Sulfl Cop. | Zinc | Copper | | Zn combines with O | |

Perforator prices I intend to give

1875 April 11th

| | | | |
|---|---|---|---|
| 1 | Planing base & bar. | | |
| 2 | Drilling & tapping & fitting on caps & top bar & boring large holes in end & Counterboring rockshaft holes. | | 3 50 |
| 3 | 2 Key Shafts at 20ct to be straightened filed to guage, collars fit on, pinned & finished Complete. | | 40 |
| 4 | 28 Keys at | 5½ | 1 54 |
| | Drill & ream face both sides. Slot. Clean off turn down 3 Key in each set | | |
| 5 | 1 Rockshaft | | |
| | Slotting Cams | 35¢ per 100. | |
| | Milling 3 cuts | 75¢ " " | |
| | Filing | 125 " " | |
| | 28 at 2.35 per 100 = | | 66 |
| | Turning shaft, Filing to guage, Squaring on arms, Drill & pinning arms, Fitting in base, Fitting on ratchet, Rotating head & collars, & numbering | | 1 40 |

| | | | |
|---|---|---|---|
| 1 | Rotating head: Filing to guage, Drilling & tapping, Make check & spring, Assemble | | 1 10 |
| | 1 Pair Bevel Gears, 1 Pair ratchets assembled complete | | 2 00 |
| 1 | Punchhead | | 10 13 |
| | Backplate | 35¢ | |
| | Base | 1.11 | |
| | 4 Posts | .45 | |
| | 2 Levers 15 | .10 | |
| | Clasp. | .20 | |
| | [illegible] | .10 | |
| | [illegible] | 3.00 | |
| | [illegible] | .15 | |
| | [illegible] Complete | 4.50 | |
| 1 | Back plate. | | 40 |
| | Steel pieces cut off & [illegible] - 25¢ - 100, Milling 2 uprights at 25¢ per 100 | | |
| | Paper feed | | 2 40 |
| | Wheel | 35¢ | |
| | Arm comp. | 35¢ | |
| | Arm filing | 20½¢ | |
| | Shaft | 5¢ | |
| | Thread[illegible] & cloth | 25 | |
| | Back ditto | 15 | |
| | Assembling | 1 00 | |

| | | | |
|---|---|---|---|
| | Cam bar. | | |
| | 28 ~~at~~ – 4½¢ | | 45 |
| | Cut off per 100 | 5¢ | |
| | Nickel " " | 5¢ | |
| | Mill " " | 25 | |
| | Drill " " | 25 | |
| | Hand file " " | 1 40 | |
| 10 | Punch bars | | |
| | 1 set | | 1 36 |
| | Cut off per 100 | 5¢ | |
| | Nickel " " | 5¢ | |
| | Straight | .45 | |
| | Milling | 1.25 | |
| | Cut slots | 1.50 | |
| | Punching ends | 1.00 | |
| | Filing | 4.00 | |
| | Cut off slots & finish comp. | 5.00 | |
| | 1 Mic. bracket | | 5 |
| 28 | 5/16 nuts [illegible] at 20¢ per 100 | | 8 |
| 36 | Brass nuts 15¢ | | 1 |
| | 2 [illegible] 5/16 [illegible] 28 at 2.50 per 100 | | |
| | 2 Hooks. | | 5 |
| | Reading board bracket | | 10 |
| | Polishing | | 1 12 |
| | Cam bar at 40¢ per 100 | | |
| | Punch bar 2¢ " " | | |
| | Rockshaft 7½¢ " " | | |
| 172 | Screws. 25¢ " " | | |

| | | |
|---|---|---|
| Screw Machine | | |
| 2 Key shaft collars cut off drilled & reamed each 1¢ | | 0 2 |
| Shafts centred & cut up at 1½¢ | | 0 3 |
| Rockshaft. | | |
| Cut off & centred | | 0 1½ |
| 3 Collars. | | 0 3 |
| [illegible] & reaming 28 Cams 40¢ per 100 | | 12 |
| Punchhead. | | 18 |
| Cut off punches 80¢ per 100 | | |
| 2 Hooks | 200 pc | |
| 4 [illegible] | 25 pc | |
| 4 Punch [illegible] | 150 pc | |
| Back plate | | |
| 2 screws complete with nuts. | 1½¢ | 0 3 |
| Paper feed | | |
| Cut off & centre shaft | 50¢ pc | |
| Collar with hole tap | 1.0 pc | 0 3½ |
| [illegible] sleeve Cut off drilled & reamed | 50¢ pc | |
| Shell | 75¢ pc | |
| 28 Cam bars | | 14. |
| [illegible] 50¢ p.c. | | |

| | |
|---|---|
| 28 [illegible] inch screws | 33 |
| Turning screw 60¢ pc<br>Cap stay nut 40 p c<br>Center screw 20 p.c. | |
| 16 Brass nuts [illegible] | |
| Tapped at 1 20 p c. | 08 |
| 6 ¾ Screws at 1 pc | 6 |
| 14 [illegible] Screws 40 p c. | 7 |
| 34 Shoulder screws 70 p c | 23 |
| 28½ " " 40 p c | 20 |
| 2 [illegible] Screws for bracket | 09 |

Planing wood cover
Painting

Iron cast at
Iron cast at
Composition at
Walnut at
Springs Rubber
Glue
Iron
Brass

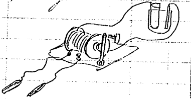
# Induction Coils experiments.

1874

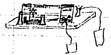
Apl 18. 1 Wound spool for single current to be made & broke quick of Iron wire. Got shock but not very strong. Size of our relay spool

2 Wound 3 layers sounder wire next to core & fine Iron wire #35 over it to fill it very good shock from Carbon battery

3 Made coil longer & put 4 layers Sounder wire on & filled up with fine Iron wire spool being about 5" long. & weighing about 3/4 lbs.
Made battery out of an old glass jar & put a piece of sheet zinc & small piece of Carbon The induction from this arrangement was very strong



Apl. 26 Made coil like following:



4 layers of Register wire & then fill up with #35 Iron wire. & then boiled in paraffine for about 1/2 hour.

Boiling in Paraffine almost double the strength:— Core made of pieces of iron wire instead of solid is much better also there ought to be lots of surface on the handles. Small Carbon battery & this works firstrate.

Recd 2d
1 Domestic Box
1 " Recorder
1 Back Point Relay
8 Rolls Iodide paper

# Gelliland & Co in Acc with T. A. Edison

| | |
|---|---|
| 1 Punch & die | 2 58 |
| 1/2 g Alcohol 35¢ | 18 |
| 1 Bitch dog | 2 |
| 3 bolt washers | 10 |
| 1 Piece iron 9 lb planed on both sides | $1 |
| 1 Small self feed S. M. | $450 00 |
| 1 Die Holder for S. M. | $10.00 |
| 1 Die Holder for do | 10 |
| 1 Die Holder for do | 10 |
| 1 Tap Holder for do | 8 70 |
| 1 Stop for Large Machine | 50¢ |
| 1 cut of & former tool for Small S. M. | 30¢ |
| 1 Die Holder for S. M. Large | $12 |
| 1 Small hollow mill | 50 $2 |
| 30 iron Wire at 12¢ | $3.60 |
| 5 lb Steel 16 \| porous pot | |
| 4 25 ohm Spools long | 6.00 |
| 11 1/2 lb Sheet Steel 22 | 2.42 2 47 |
| 2 " round steel 16 | 32¢ |
| 1 " " " | 16¢ |
| 5 new rubber magnet heads | 20¢ |
| 1/2 letter paper | 33¢ |
| 1 countersink drill for S. M. | 50¢ |
| 1 Stop for large S. M. | 50¢ |
| 1 Chuck for Screw Machine #10 | $10 |
| 1 7/16 reamer | $2 |
| 1 large duble box tool for large Machine | $20 |
| 1 9/16 reamer | 2.50 |
| 1 die holder for small S. M. | $10 |
| 1 long Hollow Stop | 50¢ |
| 1 tool for rasping Stock | 50 50¢ |
| 2 Tap Holders for small S. M. | 8 |
| 2 formers for Small S. M. | 70 |

| | | |
|---|---|---|
| | 5 Castings at 10¢ | 50¢ |
| | 2 Vises Pinch 6 84 | 13 68 |
| | 1 1/2 Wrought iron<br>1 1/2 do do | 18 |
| | 1 bbl. Charcoal | 60 |
| | 10 1/2 lb Steel 20 | 2 10 |
| | 1 Small chuck Wrenche | 50¢ |
| | 1 1/2 round Steel | 24 |
| | 1 big drill chuck | $12 |
| | 1 Split chuck for S. M. | 3 |
| | 1 Drill Jig | 2 50 |
| | 2 Qts Electropoin | 10 |
| | 2 punches ~~dies~~ Gill | 75 |
| | 2 Dies Lieman. | 1 |
| | 2 Punches " | 1 |
| | 1 Sperry Jr & D Gill | 2 |
| | 75 Porous pots 4¢ | 3 |
| | entered ok. CB | |
| | 1 Double spindle drill press | X |
| | 1 Stove | |
| | 1 Core Box tool with 2 cutters | |
| | 1 Box tool blocked out | |
| | 1 Halfround former | |
| | 1 Chuck wrench | |
| Oct 22 | ~~702 Bottles for Battery~~ | |
| 23 | 35 lb gas Pipe | |
| 25 | 14 lb " " | |
| " | 282 lb 1 3/4 Brass tubing | |
| " | 6 1/2 lb 5/16 " " | |
| 27 | 1 Box tool | $6 |
| " | 1 Sweep | 2.50 |
| | 3 Small chucks | 5 00 |

| | | |
|---|---|---|
| " 18 | One Catch Punches Dies Clamps | $5 00 |
| | 1 Small bolster | $3 00 |
| " 21 | 2 Cutters 3/16 broad 1 5/8 diam | $3 25 |
| | 1 Bevil cutter 1 5/8 × 1/4 | 2 00 |
| | 2 2" saws | 65 |
| | 1 2" saw old | 30 |
| | ~~3 long gas pipes 9/16~~ | |
| Oct 23 | 7 Extensions with Burners | |
| " | ~~2 cutters 1 5/16 diam 3/16 broad~~ | |
| 30 | One Catch Cutters | $5 00 |
| | 8 lb iron | |
| Nov 1 | 10 " " | |
| " | 2 Vises | |
| " 1 | 2 Pulleys 12 " | |
| | 32 ft Stove pipe | |
| | 50 ft Gas pipe | |
| | OK three Batchelor. | |
| " 4 | 1 lb glue | |
| " " | 9 1/2 lb Emery | |
| " " | 10 " iron | |
| " 5 | 1 lb Glue | |
| " " | 5 rolls paper | |
| " 4 | 1 9/16 Screw M. Split chuck | |
| | OK CBatchelor | |
| " 12 | 4 lb Steel | |
| " 12 | 1 Bbl Charcoal | |
| 12 | 40 lb Castor oil | |
| " | Castings for Pans | 389 |
| " | 5 lb Quicksilver | |
| " | 8 Rolls Domestic paper | |
| " 16 | 17 ft 2 1/2 in belt old | |
| " " | 1 12 in bastard file | |
| 17 | 74 Autographic Porous pots | |

## Time on Machinery

| | | | Hours |
|---|---|---|---|
| Oct | 13 & 14 | Drill Press | 8 |
| " | 15 | " " | 2 |
| | | Planer | 12 0 |
| " | 16 | Edgeing Machine | 5 |
| " | 18 | " " | 10 |
| " | 19 | " " | 10 |
| | 20 | " " | 10 |
| | 21 | " " | 10 |
| | 22 | " " | 3 |
| " | 23 | P & W. planer | 7 |
| | 24 | Small Index machine | 3 |
| | 26 | Shaper | 2 |
| | 27 | P & W. planer | 9 |
| | 28 | Shaper | 2 |
| | 28 | P & W. planer | 5 |

Work done for Kruesi by<br>up to Nov 1st

| | |
|---|---|
| ~~3 domestic boxes~~ | ~~85~~ |
| ~~3 Pattern for Pumps~~ | ~~10~~ |
| " Battery | 77 |
| 2 Domestic Boxes | 29 |

Batchelor

| | | |
|---|---|---|
| Nov 5th | Patterns for Battery | 21 |
| | Cutters | 14 |
| | Assembling batteries | 27 |
| | | 62 |

OK CB

| | | | |
|---|---|---|---|
| Nov | 1st | Engine Lathe | 12 |
| | " | 2 planers | 10 |
| | 2 | " " | 10 |
| | 3 | " " | 10 |
| | 4 | " " | 10 |
| | 6 | " " | 9 |
| | 8 | planer | 5 |
| | | | 10 |
| | 9 | 2 planers | 10 |

| | | Hours |
|---|---|---|
| Nov 12 | John Kruesi for Gillaland<br>Setting Machine | 2 |
| | Patterns for Pen Stand | 23 |
| | Boy Tom — | 5 |
| | J. Adams | 5 |
| Nov 19 | Tom | 5 |
| " " | Boy wetting paper | 2 |

| | | |
|---|---|---|
| No 10 | Edging Machine | 30 |
| 10.11.12 | 2 planers | 60 |
| 11.17th | Engine | 20 |
| 18 | Ames Lathe | 4 |
| 19 | Engine " | 10 |
| Nov 26 | Edging Machine | 6 |
| 1st to 30th | Stewart Lathe | 240 |
| " 27th | Engine Lathe | 30 |
| 1st to 30 | Fitchbourg Lathe | 100 |
| Dec 3 | P & W. Planer | 4 |
| Dec 4 | to Dec 31st | |
| | Washburne Lathe | 25 |
| | Fitchbourg Lathe<br>& Stewart | 100 |
| | Drill press | 36 |
| Jany 3d | Hand lathes | 60 |
| | Washbarne " | 20 |
| | Edging Machine | 11 |
| 8 | Washburne " | 30 |
| 10 | Plainer | 2 |

# Stock

| | Week Ending Nov 26th | |
|---|---|---|
| Nov 26 | 1 Galls fluid | 1.10 |
| | 2 1/2 Glass jars | 80 |
| " 29 | 46 Pen Boxes | |
| | 62 Rollers | |
| | 10 Distributing Boxes | |
| " 29 | 12 Rolls Idoria | 1.44 |
| | Week Ending Dec 4th | |
| | To Tom 5lb Sulphate Copper | |
| | Iodide Potass | $2.50 |
| | 1 Box Envellops | |
| Dec 11th | 20 Pens at | $3.00 |
| " 18 | 26 Pens at | 3.00 |
| | Iodide Potash | 1.00 |
| | 1 Jar for fluid | 1.00 |
| " 20th | 50 lb Glycarine | |
| | 1 lb Anilin Voilet | |
| | 12 Bottles for Ink | |
| Jany 17th | 1 Iorn Ink roller | |
| | 2 hours Work | |
| | 1 1/2 lb Wrought Iorn | |
| | 1 Large Glass Jar<br>for Condit & Hanson<br>Battery | |
| Jany 29 | 18 Pen Screw drivers | |
| | 6 Pen Cords Soldered | |

Week Ending ~~Jany~~ Feb 5th

| | Hours |
|---|---|
| Chs Wurth | 63 |
| John Kruesi | 12 |
| John Ott | 8 |
| Jim Egan | 10 |

Feb 12th

| | |
|---|---|
| Chas Wurth | 70 |
| John Kruesi | 13 |
| John Ott | 43 |
| Jim Egan | 20 |
| Tom Garland | 13 |

Feb 20th

| | |
|---|---|
| Chas Wurth | 65 |
| John Kruesi | 3 |
| John Ott | 43 1/2 |
| Jim Egan | 10 |

# Recd from Gilliland & Co 1875

## Autographic Press Parts

| | | | | No |
|---|---|---|---|---|
| Sept | 24 | Rollers | 3 | |
| Oct | 4 | " | 1 | |
| " | 8 | " | 2 | |
| " | 8 | " | 3 | |
| " | 9 | " | 2 | |
| " | 11 | " | 5 | |
| " | 23 | Presses | 2 | 27 x 29 |
| " | " | Rollers | 4 | |
| " | 30 | Presses | 9 | – 80.39.53.52 |
| | | 42,38,67,57.83 | | |
| Nov | 1 | Keys | 34 | |
| | 5 | Key | 1 | |
| | | Rollers | 51 | |
| | 7 | Presses | 5 | – 89.24 |
| | | 27,63,42 | | |
| Nov | 1st | Kreusi Battery | 10 | |
| " | 10 | Battery | 7 | |
| | 11 | " | 2 | |
| | 11 | " | 3 | |
| " | 12 | Dist Boxes | 3 | |
| " | " | Bottles Ink | 2 | |
| " | 13 | Distrib Boxes | 7 | |
| " | " | Presses - | 4 | |
| " | " | Batteries | 9 | |
| " | 15 | Bottles Ink | 3 | |

## Solutions for Chemical Telegraphy

1 Cup Carbon.

| Solution | Symbol. | Color of paper | Pen | Mark | Base. | Value | Permanent | Pen connected with | Delicacy | Chem. Action |
|---|---|---|---|---|---|---|---|---|---|---|
| Potassium Iodide | (K.I.) | White | Plat. | | | 100 | no | C. | 100 | |
| Pyrogallic Acid & Salt. | | Grey | Plat | | | | yes | Z | 10 | |

## Recd from Wurth or Shop

| | | | |
|---|---|---|---|
| | | Pens | 5 |
| | | Pens | 10 |
| Oct | 6 | Press | 20 |
| " | 6 | Pen Boxes | 100 |
| " | 25 | Pens | 5 |
| Nov | 5 | Pens | 20 |

E. H. Johnson

Oct 13th one Press complete
with Agents Box
J. W Painter
W. S. Express co
Cleveland O,

B. F. Johnson

Press complete not paid
Oct 11 " " without Battery C. O. D
" " T. B. A. David
5th Ave & Wood St
Pittsburg Pa - 1 C. O. D ok
" " B. F. Johnson 1 C. O. D.
" " DeHaven & Townsend
40th & 3d Sts. Philadelphia 1 C. O. D. ok
Oct 19 one Press, roller
& Dist Box others to be
returned
" 25 Moris & Smith
18 South 3d St Phil
27 1 Roller & 1 Bottle blue ink
Nov 5 one Press complete S Fugat & ton
241 Chesnut St Philladelphia Pa
" 5 one Autograph Press Complete
Chas. F. Garrigues
43 South frount St Phil
Nov 9th one Extra porous cup

## E. H. Johnson

Oct 13th one Press complete
with Agents Box
G. W. Painter
W. S. Express co
Cleveland O,

## B. F. Johnson

Press complete not paid
Oct 11 " " without Battry C.O.D
" " T. B. A. David
5th Ave & Wood St
Pittsburg Pa — 1 C.O.D
" " B. F. Johnson 1 C.O.D. O.K
" " DeHaven & Townsend
40th & 3d Sts. Philadelphia 1 C.O.D. O.K
Oct 19 one Press, roller
& Dist Box others to be
returned
" 25 Moris & Smith
18 South 3d St Phil
27 1 Roller & 1 Bottle blue ink
Nov 5 one Press complete S. Fugat & Mn
241 Chesnut St Philadelphia Pa
" 5 one Autograph Press Complete
Chas. F. Garrigues
43 South Front St Phil
Nov 9th one Extra porous cup

## Condensers.

~~May 9 1874~~
Oct 15th
1 Press Complete without battery for Patent office
Nov 7 one Autographic Complete to T. A. Edison

## Press to Agents

J. E. Suilterlin
103 Waverly Place
N. Y.

Oct 15th
Press complete 1 C.O.D

Blennerhasset & Edison

Nov 5 1 Press complete

" 4 one (1) Press complete
S. Fugat & Sons 241 Chesnut st Philadelphia Pa

presses Sent to Miller

Nov 5 2 Presses without Battery or Pens
2 Extra bottles blue ink
" 11 One Pen for above Press
" 11 3 Presses —
" 9 1 " Newark O.K
" " ✓ 1 " Philadelphia
" " ✓ 1 " Boston
" 15 1 " Newark
" 16. 5 " New York

1 Explain Newtons law of gravitation.

2 What is Avaogardo's or Ampère's molecular theory?

3 What is the molecular condition of the three states of matter Gas, liquid, & Solid.?

4 What is about the size & weight of a Molecule.?

5 What is meant by chemical combination?
6 " Analysis?
7 " Synthesis?
8 " the Atomic theory?

9 What is the theory of combustion? –

10 What are Alkalies & Acids?

11 Describe the Barometer?
12 Describe the Thermometer?
13 What is an Anemometer?
14 What is the meaning of 'inversely proportional to'?

15 What are the laws of Mariotte?
16 " " " " Charles.

# J. T. Murray in a/c with T. A. Edison

Aug 18th 6 Self Winder belts
" 26 6 rolls Domestic paper
30 2 Sets of Alphabet U.P.
" 6 letters for U.P.
Sept 4 1 Die Hodder
1 reamer for big holes in base
1 Ptg lever drill jig
1 Ptg lever " "
1 Drill jig for Extra Escapement
3 large base jig drill
1 Base jig for extra hole
1 T piece file jig
1 V piece drill jig
1 V " file jig
1 Crook piece drill jig
1 Paper reel arm drill jig
1 Ptg lever sho drill jig
1 Upright Drill jig
1 " file jig
1 Ink roller guide drill G
1 Unison lever drill jig
1 Stage click drill jig
1 Ink roller arm drill G
1 Stage click fill jig
1 Extra escapement lever
fill jig
1 Armature drill jig
1 Unison arm file jig
1 Upright file jig
1 Crook piece file jig
2 tripper file jig
1 T peice drill jig
1 Link file jig
1 Feed click file jig
1 Pair Ptg lever jaws
25 Adjustment pins

1 Punch & die for nuts
1 Brass base for U.P.
100 feed click Shoulder Screws
10 Bind posts half finished
15 Keepers
25 Magnet Screws
172 Type wheel nuts
40 " " half finished
16 " " levers
40 cores
20 Armitures for U.P.
6 long magnet Slides iron
3 Short do do
3 Short Brass do do
1 long ~~do~~ do do
2 " " " "
1 jig Perforator drilling sixty holes
in Cross bars
300 Stage pieces
300 " Clicks
300 Uprights
300 Unison trippers
300 V peices
35 U.P. Type wheels
1 drill jig for Magnets slides
2 Punches & 1 die for Perforator
5 lb brass castings
8 " " "
27 Crook pieces
40 lb iron rod
4 Small cutters
1 die Holder
2 fluid oz Nit Acid
1 Punch & die for Printing lever
1 drill jig for upright piece
milling gaw for Escapement lever
and mill for same

2 jaws for paper reel
2 milling jaws small
1 Square punch for nuts
1 Punch & die for Unison arm
1 file jig Printing lever
1 die for Escapement lever
1 Upright Punch & die
1 Tripper " "
1 T peice Punch & die
1 Punch & die Extra
1 Punch & die for Stage click
1 " " for lengths
3 dies for ink roller Arms
1 Small milling jaws for click
1 Punch for Crook pieces
1 Punch & die for Stage peice
1 milling jaws for Stage "
Nov 5th 12 Adjusting pins
" 3/4 lb Sheet rubber
" " 6 Printing lever Armatures
" 17 1 lb Brass
17 60.48 Shoulder Screws
18 55 Adjusting pins
Dec 14 4 Iron brackets
" 20 50 Adjusting pins
22 6 Links for Governor
" 3 Printing Levers
24 50 Small Relay Armatures
Jan 30 4 Governor Cross pieces
5 1 " ball

Recd from J. S. Murray

| | | |
|---|---|---|
| Nov | 1st | 48 receiving pens |
| " | ~~5~~ | ~~12 Adjusting pins~~ |
| " | " | 3/4 lb Stick rubber |

## Domestic Tel. Co Newark

| | | | |
|---|---|---|---|
| Nov | 12 | 4 | Rolls Iodide |
| Nov | 27 | 12 | Rolls Iodide |
| Dec | 18 | 15 | Rolls Iodide |
| Jan | 14 | 15 | Rolls Iodide |
| Feb | 23 | 25 | Rolls Iodide |
| " | 27 | 20 | " " |

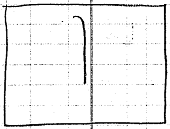
---

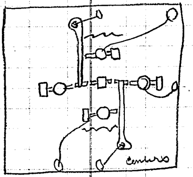
## Domestic Tel. Co N. Y.

| | | | |
|---|---|---|---|
| Nov | 8 | 12 | Rolls Iodide |
| Nov | 20 | 12 | Rolls Domestic |
| Dec | 18 | 12 | Rolls Iodide |
| " | 29 | 22 | Rolls Iodide |
| | | 12 | Rolls Iodide |
| | | 12 | Rolls Iodide |
| Feb | 27 | 12 | Rolls " |

Jany Reed 1 Bbl Kerosene Jany 8th 1877

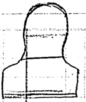
| | | |
|---|---|---|
| Jany 9th | Edisons House galls | 5 |
| 12 | Shop | 2 |
| 13 | Charles Edison | 1 |
| 15 | Edisons House | 5 |
| 13 | Adams | 1 |
| 15 | Shop | 2 |
| 16 | Krusie | 1 |
| 17 | Shop | 2 |
| 20 | Chas Edison | 1 |
| 22 | Shop | 2½ |
| 23 | Edisons House | 5 |
| 23 | Adams | 1 |
| 24 | Shop | 2 |
| 26 | " | 2 |
| 30 | " | 2 |



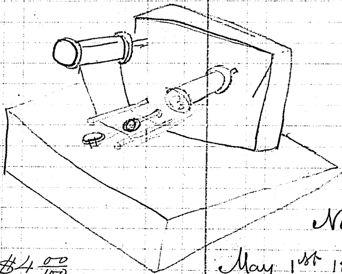


$7 50/100

No 20
Apr 30th 1877



Hand Stamp



No 21

$4 00/100 May 1st 1877

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May 2d for fixing Speechscope No 22

$2 00/100

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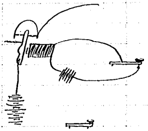
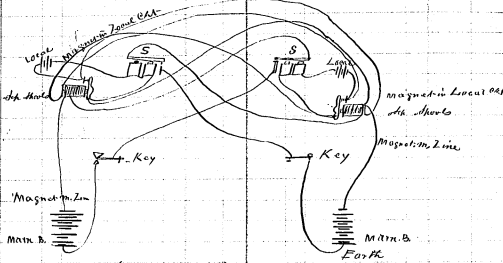
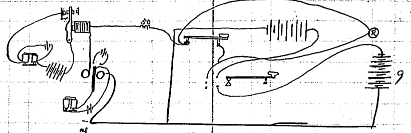
Kruesi's time Dec 1877
(HSA Mar 1966)
See original time sheets in
Doc File 1877 - Phonograph

| | | | | | |
|---|---|---|---|---|---|
| Dec | 1 | Phonograph | 10 | hrs | |
| | 2 | " | 10 | | |
| | 3 | " & Buomeson No 4 | 9 | | |
| | 4 | " | 13 | | Cash to Edison $3 00/100 |
| | 5 | " | 13 | | |
| | 6 | " | 15 | | |
| | 7 | " Patent office Model | 10 | | |
| | 8 | " " | 8 | | |
| | 9 | Phonograph | 4 | | |
| | 10 | " | 9 | | |
| | 11 | " | 10 | | |
| | 12 | " | 10 | | |
| | 13 | " | 10 | | |
| | 14 | " | 10 | | |
| | 15 | " | 10 | | |
| | 16 | Telephone | 11 | | |
| | 17 | " | 10 | | |
| | 18 | Phonograph | 12 | 184 | |
| | | | 185 | | |
| | 19 | " | 5 | | |
| | 20 | " | 13 | | |
| | 21 | " | 10 | | |
| | 22 | " | 9 | | |
| | 23 | " | 7 | | |
| | 24 | " | 9 | | |
| | 26 | " | 9 | | |
| | 27 | " | 10 | | |
| | 28 | " | 13 | | |
| | 29 | " | 10 | | Cash to Edison 6 00/100 |
| | 30 | " | 8 | | |
| | 31 | " | 9 | | Alcohol Shellack glue $2 40/100 |
| | | | 112 | | |

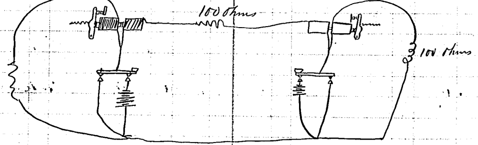



Local
Magnet in Local Ckt
S
S
Local
Sep. Spools
Magnet in Local Ckt.
Sep. Spools
Magnet in Line
Key
Key
Magnet in Line
Main B.
Main B.
Earth

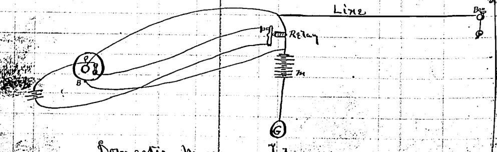
Automatic Repeater



Two messages in one direction



Duplex J. G.



Domestic Messenger Telegraph

To Make a bichromate Solution

5 gals. Water,
5 lbs bichromate broken fine
1.5 lbs Sulphuric acid

---

6 oz. — $SO_3$
20 " $HO$
2 " $KO\ 2\ CrO_3$

Telephons for Mr James New York

No 11 transmitter has got Ashhollum fluf
" 13 " " "

No 12 & 16 has got Ashhollum Poolly Pickel
weight of Globes per [illegible]
380 M. G.